Credit Name: CSE 2140 2nd Language Programming
Assignment Name: MathTutor Mastery
How has your program changed from planning to coding to now? Please explain?

PLANNING:

I plan to prompt an intro message explaining the program, declare two variables and store two randomly generated numbers (1-10) in the variables.
I would then generate a random operator and use the switch function to make the program randomly select one of four math operators. I would then make the program calculate the math question it had completely randomly generated, and then prompt the user to enter the answer to the problem. If the User's answer matches the program's calculated answer, the program will congratulate you, and if the user entered a wrong answer, it will tell you your answer is incorrect and provide the correct answer.

CODING:

1. - Intro message introduces the main goal/function of the program:

```
//Prompt user intro message
System.out.println("This program will generate 2 random numbers and use an operator on them, and its your job to answer the correct number!"
```

2.

- Scanner is set to prepare for the upcoming user inputs.
- A random class is created and is used when randomly generating the integers and operators later in the program.
- Variables are declared as integers and they store the value of the random number generated (1-10). (the range of the random number generation is 1-10, because the +1 has been added to offset the range that would have been 0-9).

```
//prepare scanner for userinputs later in program
Scanner input = new Scanner(System.in);

//Create an instance of Random class
Random random = new Random();

// declare variables to store random values, and generate random integers in range 1 to 10
int rand_int1 = random.nextInt(10) +1;
int rand_int2 = random.nextInt(10) +1;
```

3. We now need to generate a random operator
   - Int randomoperator is declared to later create 4 cases which hold the different operators
   - Character operator is assigned an empty value to later be filled.

- Case function is used to select a random operator, and for whichever case is randomly chosen, there is an according final calculated (correct) answer using the random ints and operator. Case ends off with default, incase there was a system error.

```
//using case to select a random operator, and for each case there is a final answer calculatio
int FinalAns = 0;

switch (Randomoperator) {

case 1: operator = '+';
   FinalAns = (rand_int1 + rand_int2);
   break;
case 2: operator = '-';
   FinalAns = (rand_int1 - rand_int2);
   break;
case 3: operator = '/';
   FinalAns = (rand_int1 / rand_int2);
   break;
case 4: operator = '*';
   FinalAns = (rand_int1 * rand_int2);
   break;
   default:
       System.out.println("Error, an invalid operator was generated.");
       return;

}
```

4.

- output math problem is printed by the program

-User is prompted to enter the answer to the math problem given by the program

If statement:

- if user answers correctly, they will be congratulated.

- if user answers incorrectly, the program will tell them they are wrong, and will display the correct answer.

```
//ask for userinput and store value in a integer
   System.out.println("What is " + rand_int1 + operator + rand_int2 +" ?");
   int UserAns = input.nextInt();

//If statement to decide wether or not the user input the correct answer
   if (FinalAns == UserAns){
     System.out.println("You answered correctly!");
   }
    else {
      System.out.println("You answered incorrectly! The correct answer was " + FinalAns);
   }
```